

Five New Butterflies from N. W. Tibet

(Lepidoptera: Rhopalocera)

by

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Introduction

In 1995 I proceeded on a collecting trip to Tibet and spent two months in the Xiagangjiang Mts.—a previously untouched area in entomology. The collecting result is somewhat successful, I obtained 16 species of Rhopalocera, in this paper I only describe the new subspecies.

Papilionidae

1. *Parnassius acco* ***gyanglaputsai* subspec. nov.**

(colour plate 1, figs 1a–d, 2a, 2b)

This new subspecies is fully expected to be encountered by me because the district I explored is situated almost in the centre of the distributional range of *P. acco* GRAY, 1852. To the west of the Xiagangjiang Mts. there are four valid subspecies known from Kumaon to Karakorum, and to the east four other subspecies are recorded in Nepal and central Tibet. In addition, seven taxa known as *P. przewalskii* ALPHERAKY, 1887 or treated as the *przewalskii* subspecies-group of *P. acco* by WEISS (1992: 74) are distributed in Gansu, Tsinghai and central Tibet.

Diagnosis

With a rather pale appearance, the new subspecies from the Xiagangjiang Mts. closely resembles the *acco* sub-group, a name WEISS used for the western members, including ssp. *acco* GRAY from Kumaon-Tibet border, ssp. *transhimalayensis* EISNER, 1938 from Jammu-Kashmir, ssp. *hampsoni* AVINOFF, 1916 (= ssp. *punctata* TYTLER, 1926 = ssp. *baltorana* BANG-HAAS, 1937) from Karakorum, and ssp. *tagalangi* B.-H., 1927 (= ssp. *pundjabensis* B.-H. 1927, = ssp. *chumurtiensis* B.-H., 1928) (colour plate 1, figs 2c, 2d) from Spiti, Ladak and S. W. Tibet. But the new subspecies can be distinguished from all of them by the following characters:

- 1) With a wingspan of 40–47 mm, average 43 mm, ssp. *gyanglaputsai* is usually as big as ssp. *acco*, ssp. *transhimalayensis* and ssp. *hampsoni*, but often smaller than ssp. *tagalangi*. This is not a constant diagnostic feature in subspecific classification, for the species is very variable in size.
- 2) Ground colour of ssp. *gyanglaputsai* is more tinted with cream than in all the members of the *acco* sub-group (not apparent in the photos).
- 3) In the *acco* sub-group, the outer margin of forewing is clearly defined by a line of black scales at the base of ciliae. But in ssp. *gyanglaputsai* such a line is replaced by a whitish line. This is the most important, constant diagnostic feature, identical in both sexes.
- 4) Discal band in spaces 2 and 3 of forewing of ssp. *gyanglaputsai* is usually absent or only traceable, never marked as a faint but continuous line as in the *acco* sub-group.
- 5) Submarginal spots of hindwing of ssp. *gyanglaputsai* are as large as in ssp. *acco*, ssp. *transhimalayensis* and ssp. *hampsoni*, usually smaller than they are in ssp. *tagalangi*.

Individual variation

17 ♂♂ and 8 ♀♀ of this new subspecies were obtained. Sexual dimorphism is not constantly pronounced. Size is not constant. Hindwing red ocelli vary from minute to very big but generally are medium, the colour of ocelli is frequently red but rarely yellow in the fresh males, always red in the

fresh females, always yellow or white in worn specimens of both sexes. Hindwing submarginal spots usually minute, but can be very large in very few specimens. The black basal dusting may be marked with red scales in the cell. On the forewing the discal band can be absent in space 1 and centred with paler scales in space 8.

Type data

Holotype ♂, LF: 24 mm, Naogaola, 5200 m, June 20th 1995.

Allotype ♀, LF: 25 mm, same data as holotype.

Paratypes: 16 ♂♂ and 4 ♀♀, LF: 20–29 mm, Gonggu, Chaqialou, Maojiali, Chaqiaqiang, Naogaola, Tsala, 4800–5300 m, June to August, 1995. 3 ♀♀, LF: 24–25 mm. Sangmubati Mts. (nearly 140 km to the south of Tsuochen), N. W. Tibet, 5200 m, August 17th 1995.

All types deposited in the Biological Laboratory of Qingdao Education College, China.

The subspecific name *gyanglaputsai* is a noun in local Tibetan language meaning “butterfly”.

Distribution and altitude

This new subspecies is known at present only from Xianggangjiang Mts. and Sangmubati Mts., restricted to the north of the Gangdisi Mts. which are the border of northern Tibet and southern Tibet. It is undoubtedly a true alpine butterfly, occupying the height of 4800–5300 m, but I never encountered it on the summits at height above 5400 m where only *Baltia butleri* and *Papilio kiyonobu* flew. The major numbers of ssp. *gyanglaputsai* were found on the sloping scree at height of 5200 m, but a considerable number was found in the valleys below the slopes.

Flight period

My first specimens consisting of very fresh specimens and worn specimens were taken on 19th June, on my entry into this district; most of the rest of the series on the end of June and the beginning of July. During the late July and early August I still constantly encountered this species in small numbers. My last record in the Xianggangjiang Mts. is for 3rd August. My last specimens were taken on 17th August from the Sangmubati Mts. The evidence is therefore clear; it emerges in the first half of June and reaches its peak emergence in late June and continues to emerge till the mid of July. The flight period spans at least two full months, probably more.

Field observations

Compared with *Papilio machaon kiyonobu* MORITA, 1997 and other Parnassians occurring in this district, *P. acco gyanglaputsai* could be regarded as a vagrant, it seemed not to form “colonies” but was met often as an individual flying rapidly along the valley or from a hill to another, it could be found almost everywhere in this district. However, some individuals more preferred to speed up and down the sloping scree of more or less rough rocks. When on the slopes it spent more time in perching than in flying even on fine sunny days. Its flight is rapid, nervous and just above the stones, covering a long distance or only a few steps. When it stopped flying it perched with its wings flat on the ground. It was by no means an easy butterfly to catch though its alertness was not so strong as that of *P. machaon kiyonobu*. Sometimes it gathered nectar from the yellow flowers of *Potentilla fruticosa* var. *pumila*, which was somewhat abundant in this district. At the end of the season, some ♀♀ spent their whole days in the valleys below the slopes. The suspected foodplant is *Saxifraga parva* HEMAL which is associated with *Rhodiola tibetica*, *Rhodiola bupleuroides*, *Androsace yargongensis*, *Ranunculus longicaulis* var. *nephelogenes* and the various *Kobresia* species at the foots of the slopes. At very few special biotopes where *Parnassius acdestis* and *P. epaphus* also flew, some female of *P. acco* visited some places where *Corydalis moorcroftiana* and *Corydalis cashmeriana* could be found. These *Corydalis* did not occur in the most biotopes of *P. acco*.

2. *Parnassius acdestis yanae* **subspec. nov.**
(colour plate 1, figs. 3a–d, 4a, 4b)

With a small size and less marked appearance, this new subspecies from N.W.Tibet closely resembles the *rupshuana* subspecies-group of *P. acdestis* GRUM-GRSHIMAILO, 1891, which is composed of four published names, all from Kashmir, viz. ssp. *rupshuana* AVINOFF, 1916, ssp. *takedai* MIKAMI & SAKAKIBARA, 1988, ssp. *ladakensis* AVINOFF, 1916 and ssp. *peshkei* EISNER, 1933. All these four taxa of the *rupshuana* sub-group can not be distinguished from one another constantly and as I suspect, only are part of one subspecies. The new subspecies from N. W. Tibet can be easily distinguished from them by the following characters:

Diagnosis

- 1) Reddish ocelli of hindwing of ssp. *yanae* are often larger than they are in the *rupshuana* sub-group.
- 2) Submarginal spots in spaces 2 and 3 of hindwing of ssp. *yanae* are frequently well marked as two black-ringed blue ocelli, whereas in the *rupshuana* sub-group, they are small black dots without the blue scales, the one in space 2 usually absent.
- 3) Marginal band of hindwing of ssp. *yanae* is usually absent, only very rarely marked as a very faint and narrow black line, not so fully developed as it is in the *rupshuana* sub-group.
- 4) Sexual dimorphism of ssp. *yanae* is heavily marked: the female has the ground colour more bright in appearance, the ocelli more reddish, the grey dusting less developed and the discal band of forewing entirely absent in spaces 2 and 3. Whereas in the *rupshuana* sub-group, the female agrees with male very well.

Individual variation

Only 3 ♂♂ and 3 ♀♀ were obtained. In both sexes, the submarginal markings of hindwing can be absent in spaces 4–7 and not marked with blue scales in spaces 2 and 3, the marginal line of hindwing can be appeared weakly.

Type data

Holotype ♀, LF: 26 mm. Allotype ♂, LF: 27 mm. Paratypes: 2 ♂♂ and 2 ♀♀, LF: 25.5–27 mm. Main Peak of the Xiagangjiang Mts., 5200–5300 m, 19th July to 4th August, 1995.
All types deposited in Qingdao Education College, China.

The subspecific name is after my younger sister.

Distribution and altitude

This new subspecies is restricted to very few slopes near the main peak of this district. Its vertical distribution is also very narrow, as it only flies at height of 5200–5300 m.

Flight period

My first specimen was captured on 19th July. After then I constantly encountered very few individuals until 5th August. Thus the flight period of it is very short, beginning in the mid July, lasting only 20 days and ending in the beginning of August.

Field observations

This new subspecies provides a neat and vivid contrast to *P. acco gyanglaputsai*, for whereas the latter is the most widespread and “most common” Parnassian in this district, *P. acdestis yanae* is the most local and the rarest one. I only encountered it about ten times during my whole days in this district. It flies exclusively over bleak, barren rock slides (east facing), frequently together with *P. acco*, *P. simo* and *P. epaphus*. Only on two occasions I saw it flying at the bottom of the slope where

Melitaea sindura, *Lycaena phlaeas* and *Hesperia comma* flew. It only flew when the sun was rather high and well out, and it would cease to fly as soon as the clouds appeared. Its flight is rapid, low and usually more elegant than that of *P. epaphus*. The ♀♀ liked to visit the patches of herbs between the stones where *Corydalis moorcroftiana* and *C. cashmeriana* can be found together with *Ranunculus involucreatus*, *Potentilla saundersiana*, *P. anserina*, *Artemisia hedinii*, *Urtica hyperborea* etc.

3. *Parnassius epaphus tsaiae* subsp. nov.

(colour plate 1, figs. 4c, 4d)

The new subspecies from N. W. Tibet is similar to ssp. *everesti* RILEY, 1922, ssp. *himalayanus* RILEY, 1922 from Mt. Everest and ssp. *robertsi* EPSTEIN, 1979 and ssp. *capdevillei* EPSTEIN, 1979 from central Nepal, but can be distinguished constantly by the following characters.

Diagnosis

- 1) Ssp. *tsaiae* is usually as big as ssp. *capdevillei*, but often smaller than ssp. *everesti*, ssp. *himalayanus* and ssp. *robertsi*.
- 2) Upper costal spot of forewing of female of ssp. *tsaiae* is constantly centred with red as well as in ssp. *robertsi* and ssp. *everesti*, not wholly black as in ssp. *capdevillei* and ssp. *himalayanus*.
- 3) Marginal band of forewing of ssp. *tsaiae* is as broad as in ssp. *robertsi*, but much broader than in the same sex of ssp. *everesti*, ssp. *capdevillei* and ssp. *himalayanus*, and is not so broadly chequed with white between vein-ends.
- 4) Submarginal band of forewing is much narrower than the marginal band in ssp. *tsaiae*, ssp. *everesti* and ssp. *capdevillei*, but is as broad as the marginal band in ssp. *robertsi* and ssp. *himalayanus*.

Individual variation

Only 8 ♂♂ and 3 ♀♀ are known. Sexual dimorphism is clearly marked for the ♀♀ have the ground colour somewhat darker and the marginal, submarginal bands remarkably broader. In the ♂♂ the ground colour varies from pure white to cream, the lower discal spot of forewing can be entirely black, the marginal black spots of hindwing vary from minute to large, sometimes absent.

Type data

Holotype ♂, LF: 24 mm. Allotype ♀, LF: 24 mm. Paratypes: 7 ♂♂ and 2 ♀♀, LF: 22–24 mm. Maojiali, Main Peak, 4900–5200 m. 3rd July to 5th August, 1995.

All types deposited in Qingdao Education College, China.

This new subspecies is named after Miss TSAI HSIU-LI, my friend.

Distribution and altitude

This new subspecies was met with only at some suitable biotopes in this district at height of 4900–5200 m, mostly at 5200 m. It is not confined to the sloping scree of rough rocks, but can be found also on the grassy slopes and the flat meadow. As three other *Parnassians* in this district, *tsaiae* was never encountered on the summits at height above 5300 m.

Flight period

My first *tsaiae*, a very fresh male, was captured on a sloping meadow on 3rd July. But after then I did not find another until 16th July when both sexes were out. The largest numbers were encountered in the end of July. My last specimen was caught on 5th August when the raining season of this district began, after then I did not see it again. Thus the flight period of this new subspecies lasts only a full month.

Field observations

P. epaphus tsaiae is more active than all the other Parnassians at its biotope. Every sunny day, it was the earliest flier. If the sky remained blue and cloudless at afternoon, all the other Parnassians usually perched, but *tsaiae* still flew. It liked to speed up and down the slope and the flight was rapid and low, usually covering a short distance. When it was disturbed it usually allowed itself to be carried on a wind and fled away. The ♀♀ frequently visited the patches of herbs where *Corydalis moorcroftiana* and *C. cashmeriana* could be found. When the ♀ visited a *Corydalis*, it was not so alert as usual and I could capture it easily.

4. *Parnassius simo bainqenerdini* subspec. nov.

(colour plate 2, figs. 5a, 5b, 6a, 6b)

This new subspecies is sharply different from all the known races of *P. simo* GRAY, 1852. Its most allied subspecies may be ssp. *simo* GRAY (colour plate 2, figs 5d, 6c, 6d) from S. W. Tibet and Kashmir, or ssp. *simplicata* STICH, 1907 (colour plate 2, fig. 5c) from Altun shan. The new subspecies can be distinguished from both of them by the following characters.

Diagnosis

- 1) Forewing discal band of ssp. *bainqenerdini* is very narrow near costa and is absent from spaces 2 and 3, not broadly marked from costa to dorsum as in ssp. *simo* and ssp. *simplicata*.
- 2) White band between marginal and submarginal black bands is conspicuously broader than in all the known subspecies of *P. simo*.
- 3) Marginal band of hindwing of ssp. *bainqenerdini* is usually absent, only very rarely traceable, not so fully developed as in ssp. *simo* and ssp. *simplicata*.

Individual variation

All the type specimens are constant in external features.

Type data

Holotype ♀, LF: 24 mm. Allotype ♂, LF: 23 mm. Paratypes: 2 ♂♂ and 1 ♀, LF: 23–24 mm. Main Peak, 5200–5300 m, 22nd July 1995.

All types deposited in Qingdao Education College, China.

The subspecific name is the name of Panchen Lama in Mongolian pronunciation.

Distribution and altitude

This new subspecies is restricted to the sloping scree at the foot of the main peak of the district at height of 5200–5300 m.

Flight period

Only known from mid July to early August.

Field observations

This new subspecies is as rare as *P. acdestis yanae*. It only flew at noon of the fine sunny days. Like other Parnassians, it likes to speed up and down the slopes. But its flight is weak, often covering a short distance and lasting a few seconds, this makes it a easier butterfly to catch, but its extreme rarity in nature made it still very difficult to build up a satisfying type-series.

Pieridae

5. *Mesapia peloria minima* subsp. nov.

(colour plate 2, figs 7a–f, 8a–f)

Four valid subspecies of *Mesapia peloria* have been described: ssp. *peloria* HEWITSON, 1853 (= *lama* ALPHERAKY, 1887) from Kukunoor, Tsinghai; ssp. *grayi* BANG-HAAS, 1934 from Gansu; ssp. *leechi* BANG-HAAS, 1934 from West Sichuan; ssp. *tibetensis* D'ABRERA, 1990 from S. E. Tibet.

The new subspecies from N. W. Tibet can be distinguished from all the known subspecies by the following characters.

Diagnosis

Both male and female:

1) Size (LF: 12.5–18 mm) is constantly smaller than in ssp. *peloria* (LF: 21 mm), ssp. *leechi* (LF: 20–22 mm), ssp. *grayi* (21 mm) and ssp. *tibetensis* (21 mm).

2) On the upperside hindwing, the discocellular is not so broadly marked with black as in ssp. *peloria*.

3) On the upperside hindwing, the ends of veins are broadly marked with hyaline scales as well as in ssp. *peloria* and ssp. *tibetensis*, whereas in ssp. *grayi* and ssp. *leechi*, they are unmarked.

Male:

4) Underside hindwing ground colour is paler than in ssp. *tibetensis* and ssp. *peloria*, especially in discocellular cell and basal half of space 7.

Individual variation

The ♀♀ differ from the ♂♂ not only in the brownish yellow ground colour of forewing, but also in the narrower black basal dusting on upperside hindwing and the pink colouring on the underside hindwing. In both sexes the exceedingly small form (LF: 13 mm) is not rare. In the ♀♀ the ground colour of upperside forewing varies from golden yellow to pale yellow.

Type data

Holotype ♂, LF: 17 mm. Allotype ♀, LF: 17 mm. Paratypes: 17 ♂♂ and 19 ♀♀, LF: 13–18 mm. Maojiali to Darwa lake, 4800–5200 m. 22nd June to 11th July 1995.

All types deposited in Qingdao Education College.

Distribution and altitude

This new subspecies is known at present only from the south part of the Xiangangjiang Mts. It occupies the height of 4800–5200 m.

Flight period

Just on my entry into this district on 19th June, I began to encounter this butterfly in great numbers: My last specimen was taken on 11th July when I left its biotopes. It is possible that it continued to fly after I left.

Field observations

Mesapia peloria minima is the commonest butterfly in this district. It flew lowly and slowly everywhere in this area from the steep slopes to the bottom of valleys, often willingly allowing itself to be carried by the wind. Its flight is extremely weak, this is reflected by one fact that a great number of *minima* were drowned at the streams when they drank the water. When it stopped flying it perched with its wings closed on the ground or on the herbs. But on morning when the weather was not warm enough, *minima* would spread its wings wide to seek warmth. Its honey plants are *Potentilla fruticosa* var. *pumila*, *Aster flaccidus*, *Androsave globifera* etc.

Acknowledgements

I wish to express my hearty thanks to Mr. ZHENG WEI-LIE, Tibet Ecology Institute, for his kind help in identifying the plants collected from the biotopes of new butterflies.

I am also sincerely grateful to Dr. STEFAN NAUMANN, Berlin, who kindly offered me literatures.

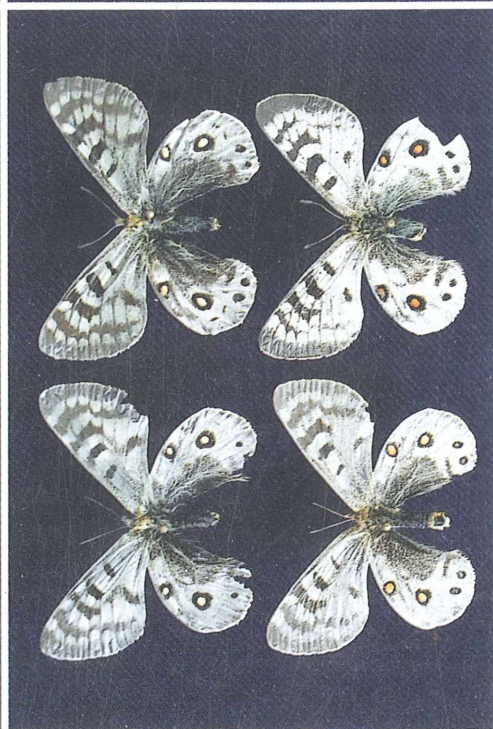
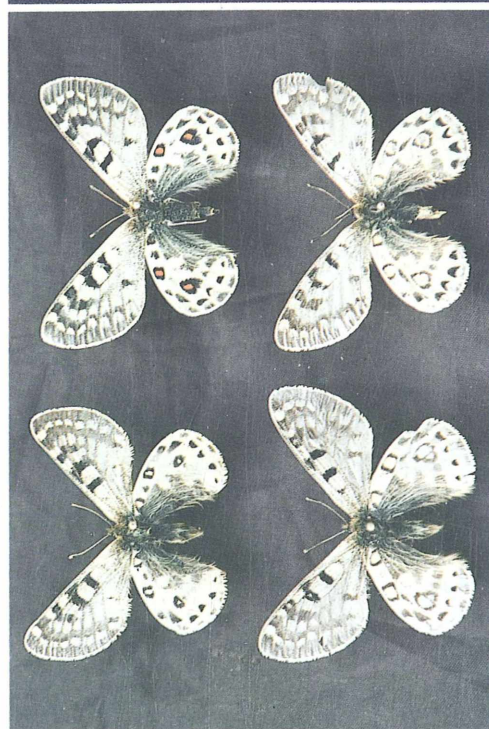
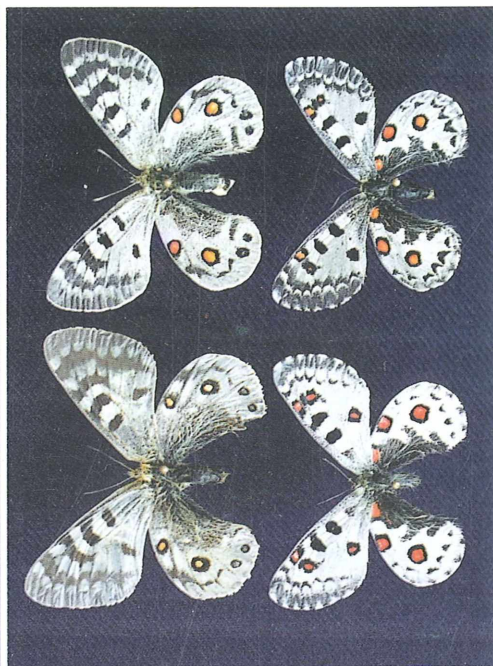
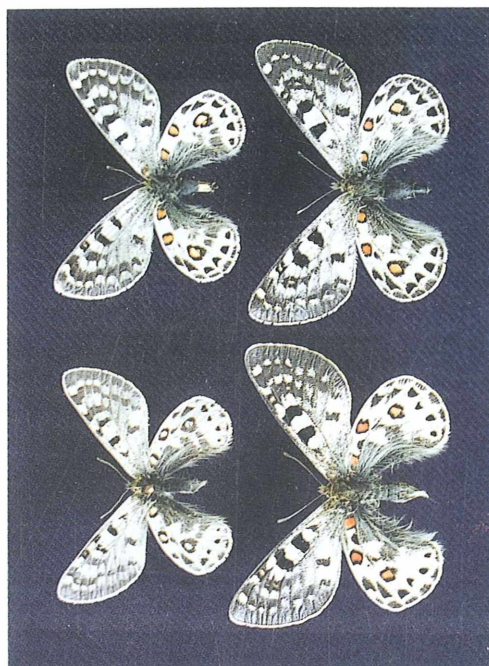
My sincere thanks are also due to Mr. SUI XIAO-LONG and Mr. JIN YAN, who kindly took the photos of the types.

Explanation of colour plate 1:

Fig. 1: *Parnassius acco gyanglaputsai*: a – holotype ♂; b – allotype ♀; c – paratype ♂; d – paratype ♀.
Fig. 2: a – *P. acco gyanglaputsai* paratype ♂; b – *P. a. gyanglaputsai* paratype ♀; c – *P. a. tagalani* ♂; d – *P. a. tagalani* ♀.
Fig. 3: *P. acdestis yanae*: a – paratype ♂; b – paratype ♂; c – paratype ♀; d – paratype ♀.
Fig. 4: a – *P. acdestis yanae* allotype ♂; b – *P. a. yanae* holotype ♀; c – *P. epaphus tsaiae* holotype ♂; d – *P. e. tsaiae* allotype ♀.

1a	1b	2a	2b
1c	1d	2c	2d
3a	3b	4a	4b
3c	3d	4c	4d

Colour plate 1



Colour plate 2:

Fig. 5: a – *P. simo bainqenerdini* allotype ♂; b – *P. s. bainqenerdini* paratype ♂; c – *P. s. simplicata* (Altun shan) ♂; d – *P. s. simo* (S. W. Tibet) ♀.

Fig. 6: *P. simo bainqenerdini*: a – paratype ♀; b – holotype ♀; *P. simo simo*: c – ♀; d – ♀.

Fig. 7: *Mesapia peloria minima*: a – holotype ♂; b – paratype ♂; c – paratype ♂; d – paratype ♂; e – allotype ♀; f – paratype ♀; g – paratype ♂.

Fig. 8: undersides of fig. 10.

5a	5b	6a	6b
5c	5d	6c	6d
7a	7b	7c	7d
7e	7f	7g	7h
7i	7j	7k	7l
8a	8b	8c	8d
8e	8f	8g	8h
8i	8j	8k	8l

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Colour plate 2

